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EXAMINER
ODLAND, DAVID E

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/608,773	DYRGA ET AL.	
	Examiner	Art Unit	
	David Odland	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,3-10 and 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganmukhi in view of Kinoshita (USPN 5,802,047), hereafter referred to as Kinoshita.

Referring to claims 1, Ganmukhi discloses an apparatus comprising:

a first interface comprising a plurality of physical communication ports to transmit data to and receive data from a plurality of network devices (a switch comprising an interface comprising a first interface comprising a plurality of ports (see the left hand side of the switch in figure 1));

a first control unit communicatively coupled to the first interface to process at least a first subset of the data (a first control processor coupled to the first interface to process data (see figure 1 and columns 1 and 2));

a second control unit communicatively coupled to the first interface and the first control unit to process at least a second subset of the data (a second control processor coupled to the first interface and first control processor to process data (see figure 1 and columns 1 and 2));

a second interface communicatively coupled between the first interface and the first and second control units (a second interface coupled to the first interface and the two control processors (see figure 1 and columns 1and 2)) such that either one of the first and second control

units may communicate with any of the plurality of network devices if the other of the first and second control units fails (if one control processor fails the other control processor will commence control processing of data from network devices coupled to both interfaces (see figure 1 and abstract and columns 1 and 2)). Ganmukhi does not disclose a logical network interface to provide multiple logical communication ports that are coupled to the physical ports of the first interface. However, Kinoshita discloses a system wherein physical ports of the router has associated logic ports (see figure 9, column 2 lines 31-50 and column 5 lines 6-11 and claim 1)). It would have been obvious to one skilled in the art at the time of the invention to have the interfaces of Ganmukhi comprise a plurality of logical ports as discloses in Kinoshita because, as Kinoshita points out in column 2 lines 26-43, doing so would allow the interfaces to communicate with an increased number of other network nodes without having to increase the number of physical ports.

Referring to claim 3, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the first interface comprises two logical communication ports for each one of the plurality of physical communication ports. However, Kinoshita discloses a system wherein each physical port has associated with it a plurality of logical ports (see figure 9, column 2 lines 31-50, column 5 lines 6-11 and claim 1)). It would have been obvious to one skilled in the art at the time of the invention to have the first interface of Ganmukhi comprise two logical ports as discloses in Kinoshita because, as Kinoshita points out in column 2 lines 26-43, doing so would allow the interface to communicate with an increased number of other network nodes rather than just one other node without having to increase the number of physical ports.

Referring to claim 4, Ganmukhi discloses the system discussed above. Furthermore, Ganmukhi discloses each of the first and second control units further comprises:

a memory device to store one or more data transmission protocols (the control processors have memory and control the operations of multiple protocols such as ATM and Ethernet (see figure 2 and column 2)); and

a processor coupled to the memory device to process network data based at least in part upon the one or more data transmission protocols (the control processor comprises an ATM processor (see figure 2)).

Referring to claim 5, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the one or more data transmission protocols include OSPF. However, OSPF is a well-known standardized communications protocol. Therefore, it would have been obvious to one skilled in the art at the time of the invention to include OSPF as one of the plurality of protocols to which the system of Ganmukhi operates because it would require less developmental costs to implement a well-known standardized protocol rather than creating and implementing a new one.

Referring to claim 6, Ganmukhi discloses the system discussed above. Furthermore, Ganmukhi discloses that the system further comprises a non-volatile memory device coupled to the first and second control units to store configuration data for use by the first and second control units (each processor comprise non-volatile storage wherein it stores stat information (see column 4 lines 8-20)).

Referring to claim 7, Ganmukhi discloses the system discussed above. Furthermore Ganmukhi discloses that the system comprises a chassis (the apparatus comprises a chassis

containing cards (see figure 1 and column 2 lines 39-42)) and at least one of the first and second control units is embodied within a second blade secured within the chassis (each control processor is embedded within a card that is inserted into a chassis (see figure 1 and column 2 lines 48-42)). Ganmukhi does not disclose that the non-volatile memory device is embodied within a first blade secured within the chassis. Rather Ganmukhi discloses that the non-volatile memory is incorporated within the control processors themselves (see figure 2 and column 4 lines 8-20)). However, it would have been obvious to one skilled in the art at the time of the invention to implement the non-volatile memory as a separate blade secured within the chassis because doing so would allow such memory to be easily replaced if it becomes inoperable whereas in Ganmukhi if the non-volatile memory becomes inoperable the entire control processor would have to be replaced, which would be more costly. Furthermore, implementing the non-volatile memory on a separate blade would allow a user of the system to use which ever type of non-volatile memory he or she wishes (i.e. different brands, RAM, flash PROM, ect...) thereby making the system of Ganmukhi more flexible.

Referring to claim 8, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the first and second interfaces are embodied within an ASIC. However, ASIC devices are highly specialized processing circuit that are used to consolidate the operation normally performed by many chips into a single package, thereby decreasing board size (or the amount of space taken up by chips on a board) and power consumption. Therefore, it would have been obvious to one skilled in the art at the time of the invention to embody the interfaces of Ganmukhi within an ASIC because doing so would decrease board size required by the interfaces and reduce the power consumption by the interfaces.

Referring to claims 9, Ganmukhi discloses the system discussed above. Furthermore, Ganmukhi discloses that the first control unit is associated with a first network address and the second control unit is associated with a second network address (each of the control processors are implemented on separate cards that are inserted into a card cage and communicate over busses and back channels, therefore inherently there must be addresses associated with these cards in order for data to be sent to the active control processor (see figure 1 and columns 2,4 and 5)).

Referring to claim 10, Ganmukhi discloses the system discussed above. Furthermore, Ganmukhi discloses that the first and second control units each independently maintain network status information (each control processor has exclusive control over central resources and internal resources such as the Management Ethernet port, buses and alarm signals (see column 3 lines 13-36)).

Referring to claim 12, Ganmukhi discloses a method of representing a plurality of physical data communication ports such that either one of a first control unit and a second control unit can communicate with any of a plurality of external devices communicatively coupled to both the first and second control units if the other of the first and second control units fails (see figure 1 and columns 1 and 2)). Ganmukhi does not disclose that the physical ports correspond to a plurality of logical data communications ports. However, Kinoshita discloses a system wherein physical ports of a router are associated with a plurality of logical ports (see column 2 lines 31-50, figure 9 and claim 1). It would have been obvious to one skilled in the art at the time of the invention to have the interfaces of Ganmukhi comprise a plurality of logical ports as discloses in Kinoshita because, as Kinoshita points out in column 2 lines 26-43, doing so

would allow the interfaces to communicate with an increased number of other network nodes without having to increase the number of physical ports.

Referring to claim 13, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose maintaining by the first control unit, first address data corresponding to the plurality of external devices; and maintaining by the second control unit, second address data corresponding to the plurality of external devices. However, Kinoshita discloses a switching system wherein a plurality of logical ports is associated with each of a plurality of physical ports, wherein the logical ports are grouped together according to a virtual-LAN configuration and the switching/routing system maintains addresses associated with the groupings (see columns 2-4). It would have been obvious to one skilled in the art at the time of the invention to have the control processors of Ganmukhi each maintain the address of a plurality of external devices, as taught in Kinoshita, as Kinoshita points out in column 2 lines 26-43, doing so would allow the interfaces to communicate with an increased number of other network nodes without having to increase the number of physical ports.

Referring to claim 14, Ganmukhi discloses the system discussed above. Furthermore, Ganmukhi discloses that the first control unit maintains the first address data and the second control unit maintains the second address data each according to at least one of a plurality of routing protocols (the control processors have memory and control the operations of multiple protocols such as ATM and Ethernet and therefore each inherently maintains addresses of nodes it needs to communicate with (see figure 2 and column 2)).

Referring to claim 15, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the one or more data transmission protocols include at least one of OSPF, BGP

or EGP. However, OSPF, BGP and EGP are well-known standardized communication protocols. Therefore, it would have been obvious to one skilled in the art at the time of the invention to include these protocols as one of the plurality of protocols to which the system of Ganmukhi operates, because it would require less developmental costs to implement well-known standardized protocols rather than creating and implementing new ones.

Referring to claim 16, Ganmukhi discloses the system discussed above. Furthermore, Ganmukhi discloses that the first control unit is associated with a first network address and the second control unit is associated with a second network address (each of the control processors are implemented on separate cards that are inserted into a card cage and communicate over busses and back channels, therefore inherently there must be addresses associated with these cards in order for data to be sent to the active control processor (see figure 1 and columns 2,4 and 5)).

Referring to claim 17, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the second network address is derived from the first network address. However, it would have been obvious to one skilled in the art at the time of the invention to derive the first address from the second address, because doing so is merely a matter of design choice.

Referring to claim 18, Ganmukhi discloses a method of representing a plurality of physical data communication ports such that either one of a first control unit and a second control unit can communicate with any of a plurality of external devices communicatively coupled to both the first and second control units if the other of the first and second control units fails (see figure 1 and columns 1 and 2)). Ganmukhi does not disclose that the physical ports correspond to a plurality of logical data communications ports. However, Kinoshita discloses a

system wherein each physical port comprises a plurality of logical ports (see column 2 lines 31-50). It would have been obvious to one skilled in the art at the time of the invention to have the interfaces of Ganmukhi comprise a plurality of logical ports as discloses in Kinoshita because, as Kinoshita points out in column 2 lines 26-43, doing so would allow the interfaces to communicate with an increased number of other network nodes without having to increase the number of physical ports. Furthermore, Ganmukhi does not disclose that the method discussed above is performed using a storage medium in conjunction with a plurality of executable instructions (i.e. software based implementation). However, it would have been obvious to one skilled in the art at the time of the invention to implement the system of Ganmukhi in a software based manner rather than hardware based because software implementation are cheaper and more easily upgradeable than hardware implementations.

Referring to claim 19, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the system is operable to perform the steps of maintaining by the first control unit, first address data corresponding to the plurality of external devices; and maintaining by the second control unit, second address data corresponding to the plurality of external devices. However, Kinoshita discloses a switching system wherein a plurality of logical ports is associated with each of a plurality of physical ports, wherein the logical ports of each physical port are grouped together according to a virtual-LAN configuration and the switching system maintains addresses associated with the groupings (see columns 2-4). It would have been obvious to one skilled in the art at the time of the invention to have the control processors of Ganmukhi each maintain the address of a plurality of external devices, as taught in Kinoshita, as Kinoshita points out in column 2 lines 26-43, doing so would allow the interfaces to

communicate with an increased number of other network nodes without having to increase the number of physical ports.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ganmukhi in view of Kinoshita and further in view of Michelson (USPN 5481673), hereafter referred to as Michelson.

Referring to claim 11, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the network status information is maintained in a routing table. However, Michelson discloses a switching system wherein status information, such as the availability or unavailability of particular routes, is stored in routing tables (see claim 1 and column 4 lines 38-43). It would have been obvious to one skilled in the art at the time of the invention to store status information in routing tables in the system of Ganmukhi, as taught in the system of Michelson, because doing so would allow the switching process of Ganmukhi to be performed in a more time-efficient manner. Namely, knowing the availability and unavailability of the links in Ganmukhi would help save processing time since routes that are not available would not be considered as possible data paths by the switch. Furthermore, the use of a routing table allows for a quick reference the switch can use to determine data paths and storing the status information in such a table will allow the switch to access the status of the determined paths all in one place (i.e. the routing table) rather than having to go to separate memories to gather such information, thereby further making the switching process of Ganmukhi more time-efficient.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ganmukhi in view Kinoshita and further in view of Laor (USPN 6,147,996), hereafter referred to as Laor.

Referring to claim 20, Ganmukhi discloses the system discussed above. Ganmukhi does not disclose that the system performs layer 2 and/or layer 3 switching. However, Laor discloses of a switching system that performs layer 2 and layer 3 switching (see abstract and column 1 lines 46-52). It would have been obvious to one skilled in the art at the time of the invention to implement level 2 and 3 switching in the system of Ganmukhi because doing so would allow the switch to perform more operations such as processing packets independently and asynchronously and the reordering of packets into their proper order, as pointed out in Laor in column 1 lines 55-59, thereby making the system of Ganmukhi more versatile.

Response to Arguments

4. Applicant's arguments filed 06/23/2003 have been fully considered but they are not persuasive.

On Page 10, regarding claim 3, the Applicant argues that the correspondence between the logical and physical Ethernet ports of Kinoshita is distinguishable from "a logical network interface to provide two logical communication ports for each one of the plurality of physical communication ports", and that the cited passage "...says nothing about a logical network interface comprising two logical ports for each physical port." The Examiner respectfully disagrees. The system of Kinoshita combines the functionality of a switch (switch part), which operates at a lower level, and the functionality of a router (router part), which operates at a higher level, into a single entity called an 'Inter-LAN Connecting Device' (as shown in figure 9). This device uses logical ports and the associated addressing when transporting packets between the host nodes, the switch part and the router part. In a conventional system the switch and

router would be separate entities that would only communicate through physical ports. Kinoshita uses logical ports/addressing to communicate the packets to the router so that less physical elements are needed, which are expensive and limiting in terms of the number of network elements (switches and users) that can be connected to it. As shown in figure 9 the router comprises a plurality of buffers 52-57 that interface the network and receive and transmit the packets with the logical addresses. The ports of the buffers comprise a plurality of physical ports. Therefore, Kinoshita discloses a 'logical network interface' (the plurality of buffer ports) comprising two logical communication ports for each one of the plurality of physical communication ports (at least two logical addresses/ports are associated with each of the plurality of buffer physical ports).

On pages 11 and 12, regarding claims 12 and 18, the Applicant argues that Kinoshita does not teach or suggest representing a plurality of physical data communication ports as a corresponding plurality of logical ports and that Kinoshita does not disclose multiple logical communication ports. The Examiner respectfully disagrees. As discussed above, the system of Kinoshita combines the functionality of a switch (switch part), which operates at a lower level, and the functionality of a router (router part), which operates at a higher level, into a single entity called an 'Inter-LAN Connecting Device' (as shown in figure 9). This device communicates packets from many users through the use of logical ports (and/or addresses) and thus uses multiple logical ports (see figures 3 and 9 and columns 4 and 5). Furthermore, the logical ports 'represent' the physical ports since the packets are addressed to the logical ports but actually flow over the physical ports (see figures 3 and 9 and columns 4 and 5). Note, the Applicant is reminded that the Examiner is required to interpret the claims in their broadest sense and so the

terms 'represent' and 'representing' are interpreted in the broadest sense. Lastly, this configuration in Kinoshita is an improvement over the conventional systems which connect the switched and routers using only physical ports, which are costly since they are implemented in hardware, and are more restrictive in terms of the number of switches, routers and users that can be connected since the number of physical ports is finite. Thus, although the router of Kinoshita only has a minimum number of physical ports, it can accept and process packets from a large number of switches (or users). This is the motivation for implementing the logical port configuration of Kinoshita in the Ganmukhi system since such an implementation would have been obvious to a skilled artisan at the time of the invention.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to David Odland, who can be reached at (703) 305-3231 on Monday – Friday during the hours of 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached at (703) 305-4744. The fax number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, who can be reached at (703) 305-4750.

deo

August 30, 2003

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
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